



AVERLOGIC

AL310C-EVB-A2

Evaluate Board

User Manual

Version 1.2

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1 Introduction

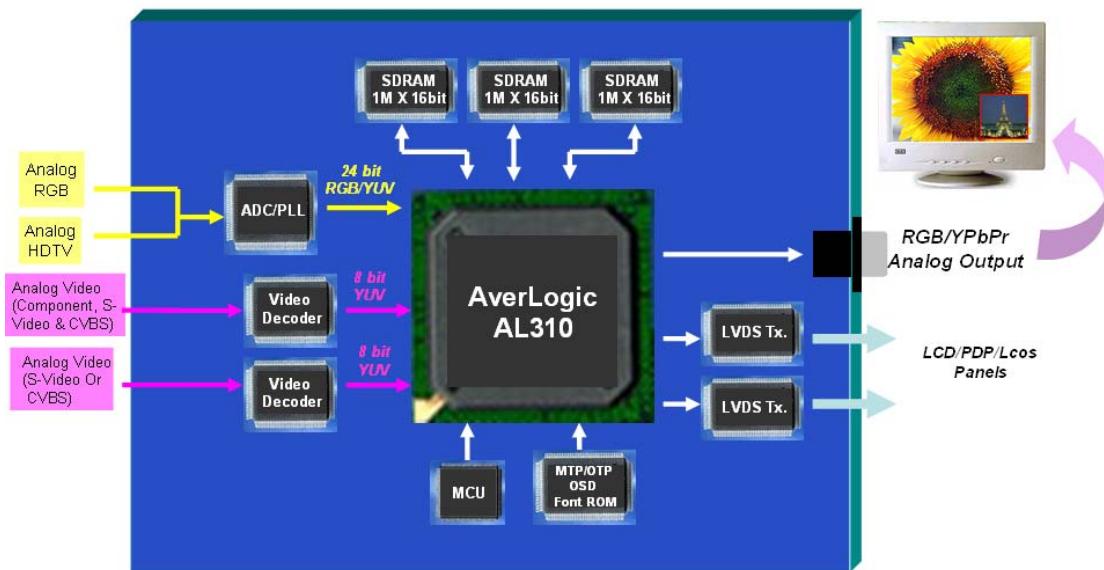
The AL310 is equipped with a high-quality scaling engine that automatically maintains full screen output display, regardless of the resolution of the incoming signals. It accepts different formats of graphic or video input and converts them into flat panel display and analog RGB/YPbPr format output. The AL310 also provides de-interlacing, filtering, sharpness and PIP support.

The AL310 is designed to enable simple connection from PC or Video devices to flat panel displays. It provides LCD/PDP monitor and projector manufacturers with a low-cost, easy solution to bring TV or PC videos to LCD panels.

2 Feature

- Support Triple Digital RGB/YUV inputs and Non-interlaced RGB/YPbPr Analog and Digital outputs
- Triple Input ports for PIP overlaying (Video over Graphics or Video over Video)
- Film Detection with Inverse 3:2/2:2 Pull Down
- Advanced Motion Adaptive De-interlacing
- Frame Rate Conversion (FRC) from 50Hz to 120Hz
- Independent Scale Up and Down in both Horizontal and Vertical direction
- Built-in LUT for Gamma Correction and Color Adjustment
- Dithering Logic for Color Depth Enhancement
- 2-Wire Serial Interface or Parallel Port Registers Access
- Built-in 2K Bytes OSD RAM and support External OSD Font ROM
- Primary input stream VBI pass through support
- Automatic screen positioning and phase adjustment support for LCD output display
- Frame capture Mirroring support in Horizontal or Vertical direction
- NTSC/PAL video Input Auto-Detection support

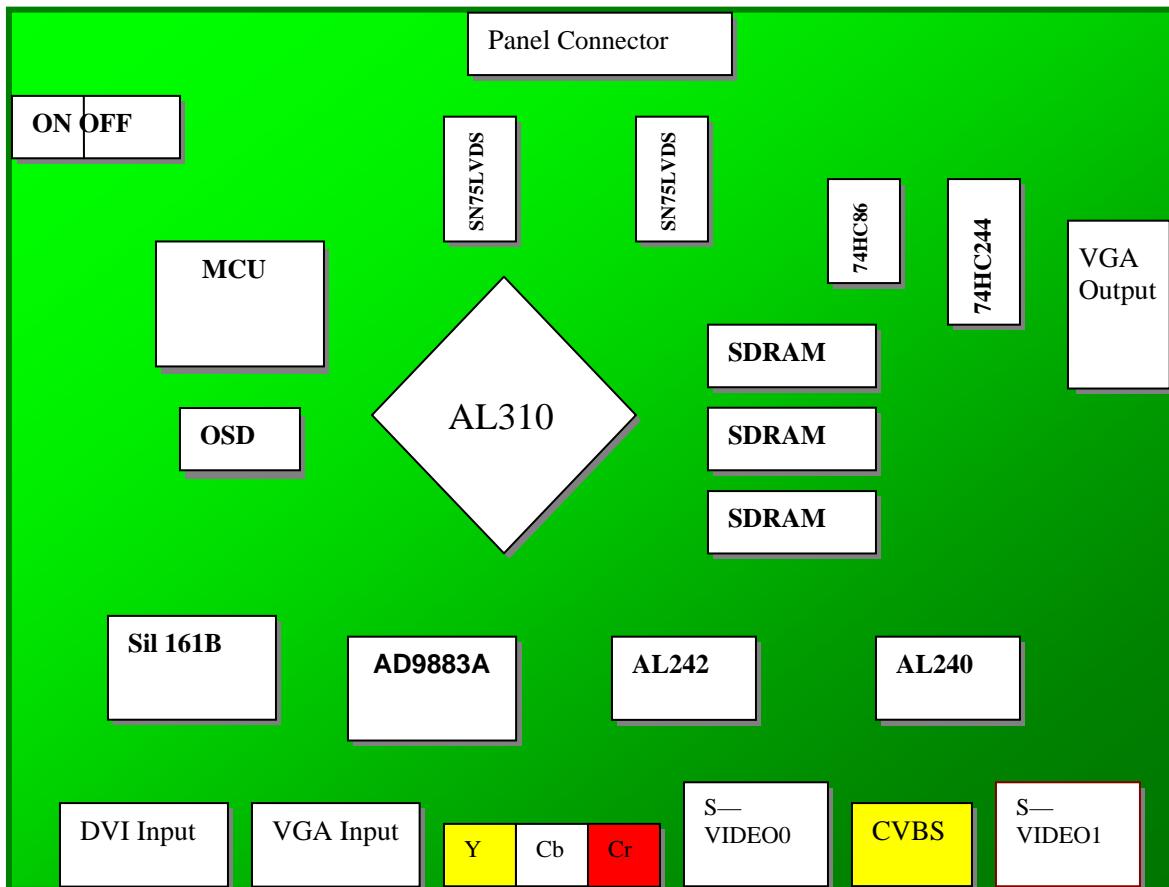
3 EVB Board Top View



4 Hardware Installation

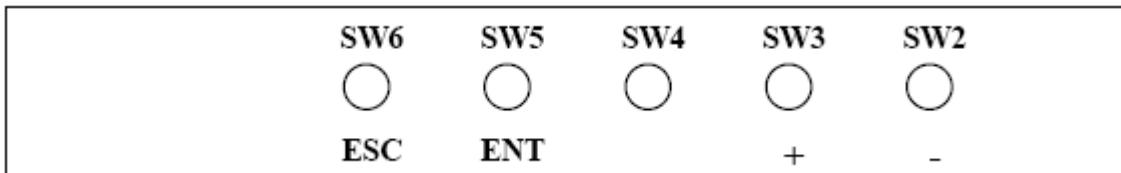
- Set Power Switch to OFF position
- Connect TV signals to Video 1 (CVBS/YCbCr/S-Video) and Video 2 (CVBS/S-Video)
- Connect VGA input to 15-pin D-sub connector
- Connect DVI signal to DVI connector (optional)
- Use the connection cable to connect AL310EVB panel connector to panel
- Connect VGA output to a VGA monitor (optional)
- Power on by setting the Power Switch to ON position

5 EVB I/O port Descriptions



- Power: 12V DC power input port (recommended type current more than 1.5A).
- VGA IN: VGA signal input port
- AV IN: CVBS video signal input port, which connects to VCD/DVD, video camera etc. peripheral equipment.
- S-VIDEO: Y/C signals.
- AUDIO IN: Audio input port.
- VGA OUT: VGA output port. Connect to monitor.
- AUDIO OUT: Audio output port.
- ANT/CABLE: TV RF signal input port, TV antenna/CATV input port.
- KEY CONNECTOR: Keyboard control interface.

6 Keypad Descriptions



KEY	FUNCTION	DESCRIPTIONS
SW6	ESC	Exit/ESC
SW5	Enter	Enter>Select
SW4	NA	NA
SW3	+	Up or ON/OFF
SW2	-	Down or ON/OFF

7 LED

- D3(Yellow)** : Twinkling when running software properly or debugging
D5(Green) : Always ON when Film mode is detected
D4(Red) : Twinkling when detecting Film mode

8 Operation Menu

8.1 Reset

Press buttons “6”, “5” and “2” simultaneously	To reload system default value and return to previous display screen. (VGA input / Panel output, SXGA)
Press buttons “6”, “5” and “4” simultaneously	To reload system default value and return to previous display screen. (VGA input / CRT output, SXGA)
Press buttons “6”and “2” simultaneously	To reload system default value and return to previous display screen. (SVIDEO1 input / Panel output, SXGA)
Press buttons “6”and “4” simultaneously	To reload system default value and return to previous display screen. (SVIDEO1 input / CRT output,, SXGA)
Press buttons “6”and “3” simultaneously	To reload system default value and return to previous display screen. (SVIDEO1 input / Panel output,, WXGA)

8.2 Main Menu

In normal display mode, press button “ESC, ENT, + or – “will enter into main menu. There are seventeen functions in the main menu mode: SETUP, PIP, SHARPNESS, INFORMATION, SATURATION, OSD AUTO, OSD Vertical Position, OSD Horizontal Position, SYSTEM,DUAL MODE, CLOCK, PHASE,

AUTO Position, Vertical Position, Horizontal Position, contrast and BRIGHTNESS.
In the main menu mode, the button function assignments are as follows:

Mode	Button Number	Function Description
Main Menu	6	Exit
	5	Enter
	4	NA
	3	Up
	2	Down

8.2.1 Set up

On the main menu, move to “SETUP” function by pressing up or down button. Then press button “5 (Enter)” to enter setup sub-menu. There are 3 items listed on the setup sub-menu: “PS” (primary stream), “SS” (secondary stream) and “OUT” (PC output resolution). The button functions are as follows:

Mode	Button Number	Function Description
Setup Sub-Menu	6	Exit
	5	Enter>Select
	4	NA
	3	Up
	2	Down

Press button “2/3” to select the setup item.

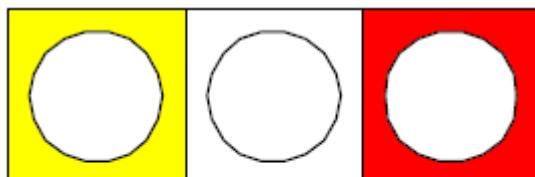
Press button “5” to enter the item sub-menu.

On the primary and secondary stream (PS/SS) setup sub-menus, move to “input source” by pressing “2/3” buttons. Then press “5” to select the input source. There are 5 items listed in both PS and SS sub-menu. Each item corresponds to an input format as follows:

Input Source	Input Format
AD9883	VGA Input
Sil61BCT100	DVI I Input
AL242	Video 1 Input
AL242	S Video 1 Input
AL242	YCbCr
AL240	Video 2 Input
AL240	S Video 2 Input

In the OUT (PC output resolution) setup sub-menu, choose output resolution using “2/3” buttons and press “5” to select the output resolution.

Please be noted that AL310EVB only supports RGB (VGA) output at this stage.



CVBS

Y

Cb

Cr

For YCbCr input format only support by AL242 Video 1 input, the Yellow represents CVBS/Y input, White represents Cb input and Red represents Cr input

8.8.2 PIP(Picture in Picture)

On the main menu, move to “PIP” icon by pressing “2/3” buttons. Then press “5 (Enter)” to enter “PIP” sub-menu. There are 5 items listed on PIP sub-menu: “PIP AUTO”, “LIMIT”, “SWITCH”, “BORDER” and “SIZE”. The button functions are as follows:

Mode	Button Number	Function Description
PIP	6	Exit
Sub-Menu	5	Enter>Select
	4	NA
	3	Up or ON/OFF
	2	Down or ON/OFF

Move to PIP icon by pressing button “2/3”. Press button “5” to enter the item sub-menu. The listed item and corresponding button functions are as follows:

Mode	Function Descriptions
PIP AUTO	Using “5” button to select auto control PIP
LIMIT	Using “2/3” button to toggle ON/OFF switch of Limit PIP mode
SWITCH	Using “2/3” button to toggle ON/OFF switch of PIP mode
BORDER	Using “2/3” button to toggle ON/OFF switch of Border line for PIP window
SIZE	Using “2/3” button to select PIP windows size

8.8.3 SHARPNESS

On the main menu, move to “SHARPNESS” icon by pressing “2/3” buttons. Then press “5 (Enter)” to enter “SHARPNESS” sub-menu. The button functions are as follows:

Mode	Function Description
SHARPNESS sub – menu	Using “2/3” buttons to toggle ON/OFF switch of sharpness control

8.8.4 INFORMATION

On the main menu, move to “INFORMATION” icon by pressing “2/3” buttons. Then press “5 (Enter)” to enter “INFORMATION” sub-menu. The button functions are as follows:

Mode	Function Description
INFORMATION sub – menu	Press “5” to display the input (PS/SS) and output format. Also, press “2/3” buttons to display the latest updated software date/time.

8.8.5 SATURATION

On the main menu, move to “SATURATION” icon by pressing “2/3” buttons. Then press “5 (Enter)” to enter “SATURATION” sub-menu. The button functions are as follows:

Mode	Function Description
SATURATION sub – menu	Using “2/3” buttons to adjust saturation level

8.8.6 OSD POSITION

On the main menu, move to “OSD POSITION” icon by pressing “2/3” button. Then press “5 (Enter)” to enter “OSD POSITION” sub-menu. There are 4 items listed on “OSD POSITION” sub-menu: “OSD HORIZONTAL POSITION”, “OSD VERTICAL POSITION”, “OSD AUTO”, “OSD ALPHA”. The button functions are as follows:

Mode	Function Description
OSD H POS sub – menu	Press “2/3” buttons to adjust horizontal position of OSD window
OSD V POS sub – menu	Press “2/3” buttons to adjust vertical position of OSD window
OSD AUTO sub – menu	Press “5” to select OSD auto control mode
OSD ALPHA sub – menu	Press “2/3” buttons to adjust ALPHA of OSD window

8.8.7 THRESHOLD

On the main menu, move to “THRESHOLD” icon by pressing “2/3” buttons. Then press “5 (Enter)” to enter “THRESHOLD” sub-menu. The button functions are as follows:

Mode	Function Description
TH sub – menu	Press “2/3” buttons to adjust threshold of Motion Adaptive

8.8.8 SYSTEM

On the main menu, move to “SYSTEM” icon by pressing “2/3” buttons. Then press “5 (Enter)” to enter “SYSTEM” sub-menu. There are 7 items listed on the system sub-menu: “PA”, “DM”, “PT”, “ST”, “FM”, “MOTION” and “DITHER”. The button functions are as follows:

Mode	Button Number	Function Descriptions
SYSTEM Sub-Menu	6	Exit
	5	Enter>Select
	4	NA
	3	Up or ON/OFF
	2	Down or ON/OFF

Move to the function by pressing “2/3” buttons. Press “5” to enter sub-menu. The listed item and corresponding button functions are as follows:

Mode	Function Description
PA	Press “2/3” buttons to select register access port (PARA - parallel, I2C – serial)
DM	Press “2/3” buttons to toggle on/off switch of Dual Mode
PT	Press “2/3” buttons to toggle on/off switch of primary stream tri-pixel mode (PS_TRIPIXEL)
ST	Press “2/3” buttons to toggle on/off switch of secondary stream tri-pixel mode (SS_TRIPIXEL)
FM	Press “2/3” buttons to toggle on/off switch of Film Detection
MOTION	Press “2/3” buttons to toggle on/off switch of Motion Adaptive De-interlacing
DITHER	Press “2/3” buttons to toggle on/off switch of Dithering function

8.8.9 GAMMA function

On the main menu, move to “GAMMA” icon by pressing “2/3” buttons. Then press “5 (Enter)” to enter “GAMMA” sub-menu. The button functions are as follows:

Mode	Function Description
GAMMA sub – menu	Press “2/3” buttons to adjust GAMMA levels.

8.8.10 SIZE

On the main menu, move to “GAMMA” icon by pressing “2/3” buttons. Then press “5 (Enter)” to enter “GAMMA” sub-menu. The button functions are as follows:

Mode	Function Description
H_SIZE sub – menu	Press “2/3” buttons to adjust H_size

V_SIZE sub – menu	Press “2/3” buttons to adjust V_size
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8.8.11 AD

On the main menu, move to “AD” icon by pressing “2/3” buttons. Then press “5 (Enter)” enter “AD” sub-menu. There are 2 items listed on system sub-menu: “PHASE” and “CLOCK”. The button functions are as follows:

Mode	Function Description
PHASE sub – menu	Press “2/3” buttons to adjust phase level
CLCOK sub – menu	Press “2/3” buttons to adjust clock level

8.8.12 AUTO POSITION

On the main menu, move to “AUTO POS” icon by pressing “2/3” buttons. Then press “5 (Enter)” to enter “AUTO POS” sub-menu. The button functions are as follows:

Mode	Function Description
AUTO POS sub – menu	Press “5” to select auto position control mode for display

8.8.13 Vertical Position

On the main menu, move to “AUTO POS” icon by pressing “2/3” buttons. Then press “5 (Enter)” to enter “AUTO POS” sub-menu. The button functions are as follows:

Mode	Function Description
V POSITION sub – menu	Press “2/3” buttons to adjust vertical position of display

8.8.14 Horizontal Position

On the main menu, move to “H POSITION” icon by pressing “2/3” buttons. Then press “5 (Enter)” to enter “H POSITION” sub-menu. The button functions are as follows:

Mode	Function Description
H POSITION sub – menu	Press “2/3” buttons to adjust horizontal position of display

8.8.15 CONTRAST

On the main menu, move to “H POSITION” icon by pressing “2/3” buttons. Then press “5 (Enter)” to enter “H POSITION” sub-menu. The button functions are as follows:

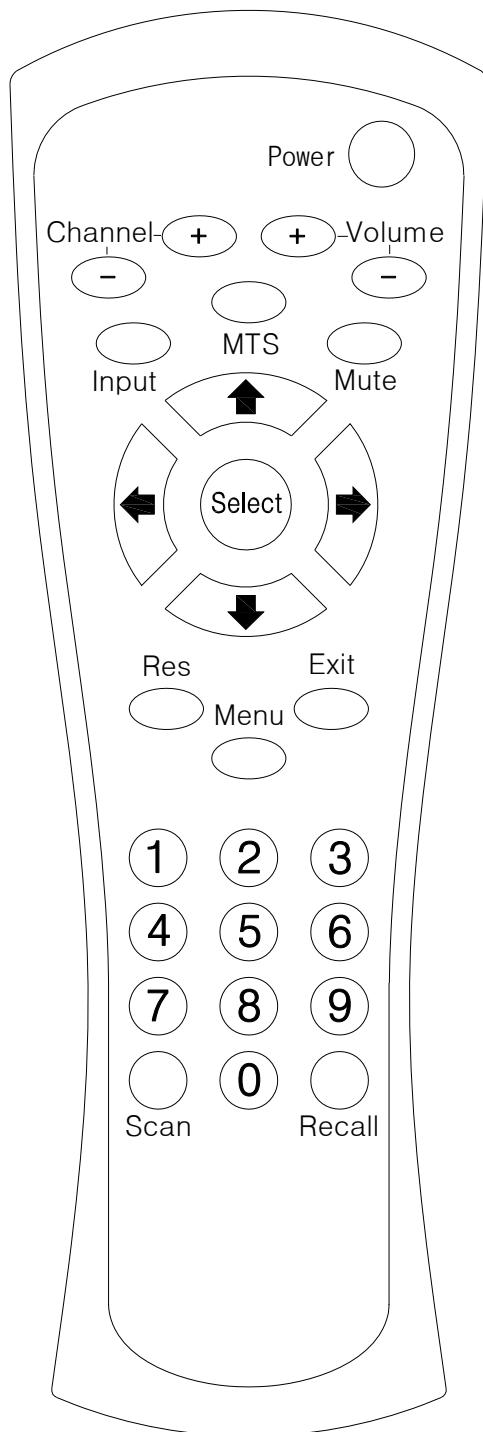
Mode	Function Description
CONTRAST sub – menu	Press “2/3” buttons to adjust contrast level

8.8.16 BRIGHTNESS

On the main menu, move to “H POSITION” icon by pressing “2/3” buttons. Then press “5 (Enter)” to enter “H POSITION” sub-menu. The button functions are as follows:

Mode	Function Description
BRIGHTNESS sub – menu	Press “2/3” buttons to adjust brightness level

9 Remote Controller Setting



9.1 Remote Controller Key Descriptions:

- 1) Power: Start/Stop.
- 2) Ch+/Inc: The selector marker shift upwards while press this key when the menu displays, otherwise (just TV input) channel increase while press.
- 3) Ch-/Dec: The selector marker shift downwards while press this key when the menu displays, otherwise (just TV input) channel decrease while press.
- 4) Menu: Enter menu.
- 5) Exit: Exit menu.
- 6) Select: Select a menu item.
- 7) Vol+: Volume control increases while press this key when the menu doesn't display, otherwise it is increase or selection.
- 8) Vol-: Volume control decreases while press this key when the menu doesn't display, otherwise it is decrease or selection.

Ps: Hereinbefore 7 key correspond with the 7 key in TV BOX, but it have not compound key feature.

- 9)  : Channel inc/dec (just TV Input).
- 10)  : Volume adjusts.
- 11) Mute: Disable/enable audio output.
- 12) 0-9: Direct select channel and need not set the digit. After pressed these numbers, the new channel No. would displayed with green character, Wait 1~2 seconds, switch to new channel, the channel No. character turn to natural white. If the number selected more than the maximum of the preset channel, the channel No. will be adjusted to the maximum automatically.
- 13) Res: Reset key, this key corresponds with the compound key K1K2K4 in TV BOX. Press the power key could start TV BOX after reset success.
- 14) Recall: Return to the last selected channel while press this key.
- 15) SCAN: Browse all TV channels which preset while press this key.
- 16) MTS: Open/close "channel No./band" OSD while press this key.

CONTACT INFORMATION

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